GRAPHTEC

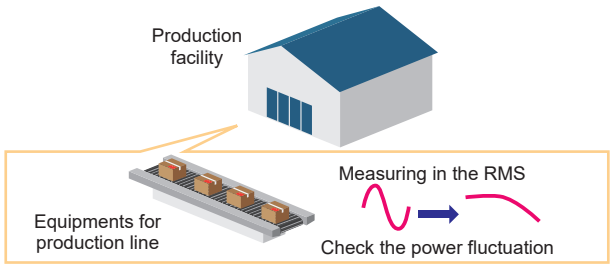
DATA PLATFORM GL7000

High voltage measurement, 4ch model

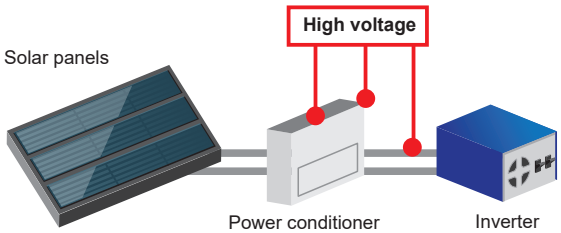
Easy to measure the voltage of the AC power source in the RMS (effective value)

- High input voltage (Maximum 1000V)
- Real-time RMS (effective value) measurement
- Input coupling of DC and AC
- Max. 1M Samples/s (1µs) Simultaneous sampling

Monitoring the AC power source



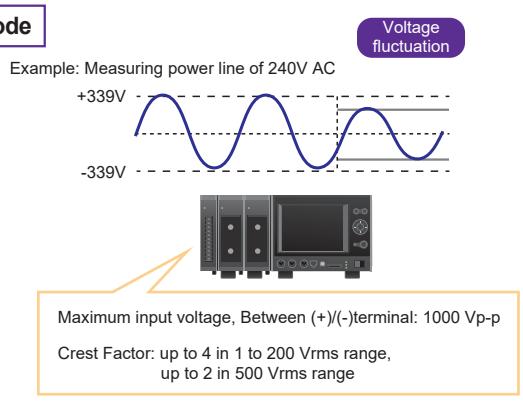
Evaluation test of solar power



Measuring the AC voltage in the RMS

Support the measurement of high voltage and RMS (effective value). It is able to measure the AC power line using RMS. The input signal can be also measured in the instantaneous value as a DC voltage measurement.

Normal mode



RMS measurement Measurement of the true RMS

Data capturing time

Support multiple types of strage device realize to cature data in the power voltage monitoring of long time and even also the waveform monitoring of short time.

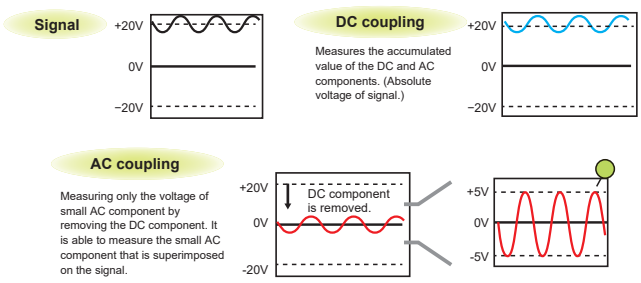
Supported strage device
- Built-in RAM
- Built-in Flash
- SD memory card
- SSD (Option)

Strage	Sampling speed (Interval), Capturing tim (Upper: 2ch used, lower: 4ch used)		
	1MS/s (1µs)	1kS/s (1ms)	1S/s (1s)
RAM	2 sec. 2 sec.	Approx. 33 min. Approx. 33 min.	Approx. 23 days Approx. 23 days
Built-in Flash memory *	Not Available	Approx. 55 hrs Approx. 34 hrs	Approx. 2323 days Approx. 1452 days
SD card *	Not Available	Approx. 59 hrs Approx. 37 hrs	Approx. 2485 days Approx. 1553 days

* Calculated with 2GB, GBD data format

DC- or AC-coupling

By the DC- and AC-coupling, the voltage of small signal superimposed on input signal or also the absolute voltage value of input signal are able to record.



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GL7000 specifications		
Item		Description
Number of module		Attached to up to 10 modules *1
Number of input channels		Max. 112 channels in 1 of GL7000
External Input/Output signals *2	Input	Start/Stop, External trigger, External sampling, Auto balance Signal type: Contact (relay), Open collector, Voltage
	Output	Trigger, Busy, Alarm (10 channels) *3 Signal type: Open collector (pulled-up by resistor 10 kΩ)
Trigger, Alarm function	Trigger action	Start or stop capturing data by the trigger
	Trigger repeat	Enabled (ON): Automatically re-armed for the next data capture function Disabled (OFF): Data capture is completed in a single trigger
	Trigger source	Start: Off, Measured signal, Alarm, External signal, Clock, Week or Time Stop: Off, Measured signal, Alarm, External signal, Clock, Week or Time
	Trigger determination conditions for measured signal	Combination: OR or AND condition at the level of signal or edge of signal Analog: Higher/Rising, Lower/Falling, Window-in, Window-out Logic *4: Higher/Rising, Lower/Falling Pulse *4: Higher/Rising, Lower/Falling, Window-in, Window-out
	Alarm determination condition *5	Combination: OR or AND condition at the level of signal or edge of signal Analog: Higher/Rising, Lower/Falling, Window-in, Window-out Logic *4: Higher/Rising, Lower/Falling Pulse *4: Higher/Rising, Lower/Falling, Window-in, Window-out
	Alarm output	10 channels
	Pre-trigger *6	Number of data before trigger: Up to specified number of captured data
Calculation function	Between channels	Addition, Subtraction, Multiplication and Division for two analog inputs (Sampling speed is limited up to 10 Samples/s (100ms interval). Available arithmetic element and the output destination is the analog input channel 1 to 100.)
	Statistical	Select two calculations from Average, Peak, Max., Min. in real time and replay *7
Move function of the display range		Beginning, center or end of the data, Trigger point, Specific time (absolute, relative), Call cursor
Search function		Search for analog signal levels, logic signal pattern, pulse signal levels or alarm point in captured data
Annotation function		Comment can be set in each channel (up to 31 alphanumeric characters)
Message / Marker Functions		Message: The registered messages or entered message is able to be recorded for any timing. Up to 8 messages can be pre-registered. Marker: Marker is able to record for occurring alarm or power failure.
Resume		Resume automatically in the same condition after power is recovered as when the power failure occurred during data capture *8
Interface to PC		Ethernet (10 BASE-T/100 BASE-TX), USB 2.0 (High speed)
Network function		WEB server, FTP server, FTP client, NTP client, DHCP client
USB drive mode		Emulate the USB memory device *9
Storage device	Built-in	RAM (2 million samples for each channels, built-in amplifier module), Flash memory (2 GB, built-in the main module)
	External *10	SD card (Support SDHC, up to 32 GB) slot, SSD (Approx. 64 GB) The file for capturing data is limited up to 2 GB.
Data saving function	Captured data*10	Built-in RAM, Built-in Flash, SD memory card, SSD (Data is saved directly to it.)
	Data in built-in RAM	Specified number of data up 2 million samples in increments of 1
	Auto save *10	Available for the built-in RAM Enabled (ON): Data in the RAM is saved automatically to the built-in Flash, SD memory card, SSD Disabled (OFF): Data in the RAM is not maintained after power is turned off
	Capturing mode *10	Mode: Off, Normal, Ring, Realy Ring*11: Saved most recent data (Number of capturing data: 1000 to 2000000 points, Destination of data: Built-in RAM, Built-in Flash, SD memory card, SSD) Relay*12: Saved data to multiple file without losing data until capturing data is stopped (Distination of data: Built-in Flash, SD memory card, SSD)
	During data capture *13	Displaying information in two windows, Hot-swapping the SD memory card, Saving data in between cursors.
	Backup *10	Backup interval: Off, 1, 2, 6, 12, 24 hrs. Data destination: SD memory card, SSD, FTP server
Engineering Scale function		Measured value can be converted to the engineering unit Analog voltage: Converts by four reference points (gain, offset) Temperature: Converts by two reference points (offset) Pulse count: Converts by two reference points (gain)
Synchronization between units		Start and Trigger *14
Accuracy of clock (at 23°C)		± 0.002 % (Monthly deviation approx. 50 sec.)
Operating environment		0 to 45 °C, 5 to 85 % RH (non condensed)
Power source		100 to 240 V AC, 50 to 60Hz
Power consumption		85 VA
Standard accessories		Quick guide, CD-ROM, AC power cable
External dimensions (W x D x H)		Main module: Approx. 193 x 141 x 160 mm (Excluding Projection), Alarm output terminal: Approx. 30 x 136 x 145 mm (Excluding projection)
Weight		Main module: Approx. 2.2 kg, Alarm output terminal: Approx. 350 g
Display module specification		
Model number		GL7-DISP
Display device		5.7-inch TFT color LCD monitor (VGA: 640 x 480 dots)
Operation section		Touch panel and Cursor keys*15
Touch panel		Capacitive type touch panel, Operated by finger or the proprietary pen
Displayed language		English, French, German, Chinese, Korean, Japanese
Screen saver		Turns off backlight by 10, 30 sec., 1, 2, 5, 10, 30, 60 min.
Displayed information		Waveform in Y-T with digital values, Waveform only, Digital value, Waveform in X-Y
Connection cable		LAN cable (CAT5 class, Straight connection, Up to 10m) *16
Standard accessories		Bracket for slanted mount, Connection cable (40cm), Ground cable, Screws
External dimensions (W x D x H)		Approx. 187 x 34.5 x 119 mm (Excluding projection)
Weight		Approx. 530 g

High Voltage Input Module Specifications		
Model number		GL7-HV
Number of input channels		2 channels
Input method		All channels isolated unbalanced input, Simultaneous sampling, Isolated BNC connector
Sampling speed (interval)		1 M Samples/s to 1 Sample/h (1µs to 1hr.)
Built in RAM		2 million samples for each channels
Input coupling and measurement		AC, DC, AC-RMS, DC-RMS
Measurement range	DC, AC	2, 5, 10, 20, 50, 100, 200, 500, 1000 V Full Scale
	DC-RMS, AC-RMS	1, 2, 5, 10, 20, 50, 100, 200, 500 Vrms Full Scale (Crest Factor: up to 4 in 1 to 200 Vrms range, up to 2 in 500 Vrms range)
Measurement accuracy*17	DC, AC	± 0.25 % of Full Scale
	DC-RMS	Sine wave measurement ± 0.5 % of Full Scale (at 20Hz ≤ F ≤ 1kHz) ± 1.5 % of Full Scale (at 1kHz < F ≤ 20kHz) Response time: 500ms (Crest Factor is up to 4)
	AC-RMS	Sine wave measurement ± 0.5 % of Full Scale (at 100Hz ≤ F ≤ 1kHz) ± 1.5 % of Full Scale (at 1kHz < F ≤ 20kHz) Response time: 500ms (Crest Factor is up to 4)
A/D converter		Successive approximation type, 16 bits (effective resolution: 1/40000 of the measuring full range in the DC and AC coupling., 1/20000 of the measuring full range in the DC-RMS, AC-RMS coupling)
Input impedance		1 MΩ ±5%
Maximum input voltage	Between (+)/(-)terminal	1000 Vp-p
	Between channels ((-) terminals)	300 Vrms AC
	Between channel/GND	300 Vrms AC
Max. voltage (withstand)	Between channels	2300 Vrms AC (1 minute)
	Between channel/GND	2300 Vrms AC (1 minute)
Isolation	Between input/GND	Min. 50 MΩ (at 500 V DC)
Common-mode rejection ratio		Min. 90 dB (50/60 Hz, Signal source impedance: Max. 300 Ω)
Frequency response		DC Coupling: DC to 200 kHz (+1/-3 dB) AC Coupling: 4Hz to 200 kHz (+1/-4.5 dB)
Filter	Low pass	OFF, Line (1.5Hz), 5, 50, 500, 5k, 50k Hz (at -3dB, 6dB/oct)
External dimensions (W×D×H)		Approx. 49 x 136 x 160mm (Excluding projections)
Weight		Approx. 740 g
Software specifications		
Model name		GL-Connection
Supported OS		Windows 8, Windows 7 (32/64-bits, Except Starter edition), Vista (32/64-bits)
Functions		Control GL7000, Real-time data capture, Replay data, Data format conversion
Controlled unit		Up to 10 units (Max. 1120 channels)
GL7000 Settings control		Input settings, Memory settings, Trigger and Alarm settings, Other settings
Captued data *18		Built-in RAM (Binary format), Built-in Flash memory (Binary, CSV format), SD memory card (Binary, CSV format), SSD (Binary, CSV format) The sampling speed is limited by the number of channels used when data is saved in the CSV format. (1 ms per channel. When 10 channels are set, sampling is limited to 10 ms.)
Displayed information		Analog waveforms, Logic waveforms, Pulse waveforms, Digital values
Display mode		Y-T waveform with digital values, X-Y graph in real time, Cursor information, Capture condition, Alarm information
File operation		Converts binary data to the CSV data (specific period, all data in one file, multiple files), Creates a new file with compression or by consolidating multiple files.
Warning Function		Send e-mail to the specified address when the alarms occur
Statistical calculation		Capturing data: Maximum, Minimum, Peak or Average Replaying data: Maximum, Minimum, Peak, Average or RMS in between cursors
Search function	Level	Specific level in any channels
	Alarm	Occurred alarm in any channel
	Time	Beginning, center, end of the data, Trigger point, Specific time (absolute, relative), Specific number
Operation lock		Operation screen can be locked (It is unlocked with a password.)

*1. Excluding the function module as the Display module or SSD module. In case of the DC Strain module (GL7-DCB): up to 8 modules. In case of the Logic/Pulse module (GL7-L/P): input mode is selected in the logic or pulse for each module, up to 7 modules when the module is used in the logic mode, up to 2 modules when the module is used in the pluse mode.
*2. The Input/Output cable (B-513) is required for connecting the signal. The Auto balance signal input and the Busy signal output are available in the DC Strain module (GL7-DCB).
*3. The alarm signals are outputted on the terminal block attached to the main module as standard accessory.
*4. It is available on the Logic/Pulse (GL7-L/P) module.
*5. Method of detection
Volt./Temp. module:
The alarm is detected every 5 seconds when the sampling interval is longer than 5 seconds and reported. The alarm is detected in the sampling interval when the sampling interval is shorter than 5 seconds and reported.
Other modules:
The alarm is detected every 1 ms when the sampling interval is shorter than 1ms. The alarm is detected in the sampling interval when the sampling interval is set between 2 ms to 5 seconds and reported. The alarm is detected every 5 seconds when the sampling interval is longer than 5 seconds and reported.
*6. It is available when the captured data is saved to the built-in RAM. The pre-trigger function may not available in combination with the trigger settings.
*7. The result of real time calculation is displayed in the digital display mode. Available sampling speed is the 10 samples/s (100 ms interval).
*8. When the captured data destination is set to the built-in-RAM, the captured data is not maintained after a power failure is occurred. When distination is set to the built-in Flash or the SD memory card, it may have a problem by a power failure if it is being accessed to write data. If the memory device is not damaged, the closed data file is maintained. The file is closed every minute while data is being captured. This function is not available when the FFT mode or the Voltage Output mnodule (GL7-DCO) is used.
*9. The USB drive mode is started by setting of the switch on the main module. It can be also started when the power is turned on while pressing the START/STOP key on the display module.
*10. The SD memory card is not included as a standard accessory. Compatible SD card type: SD, SDHC Speed class 4 or faster. The SSD module (GL7-SSD) is an option.
*11. The capacity for saving the data is set to one third of available memory when the captured data destination is set to a device other than the built-in-RAM. Available sampling speed is up to 10 samples/s (100ms interval).
*12. The file size of captured data is limited up to 2 GB. When the captured data distination is set to the built-in Flash or the SD memory card, sampling speed is limited up to 100 samples/s (10 ms interval). In case of using the SSD module (GL7-SSD), sampling speed in limited up to 50 thousand samples/s (20 µs interval) when 1 or 2 modules are attached.
*13. This function is able to be available when sampling speed is set up to 10 samples/s (100 ms interval).
*14. The Sync cable (B-559) is required when this function is used. The GL-Connection software is required when the synchronizing function is used.
*15. Most operations can be selected by both the touch panel and keys.
*16. When the display module is mounted at an angle using the bracket, the display module is connected to the main module by a LAN cable that is attached to the display module as a standard accessory.
*17. Subject to the conditions: ● Room temperature is 23 ºC ± 5 ºC. ● When 30 minutes or more have elapsed after power was turned on. ● Filter is set to 10. ● Sampling rate is set to 1 second. ● GND terminal is connected to ground.
*18. The captured data that is saved to the built-in-RAM or SSD cannot be saved to the PC in real time. The data in the built-in-RAM or SSD needs to be transferred to the PC after data capture is completed.

GL7000 Model for Vibration measurement, 8 channel		
Item	Model number	Quqntity
Main module	GL7000	1
Input module	GL7-HV	2
Display module	GL7-DISP	1

⚠ For using equipment in correctly and safely
- The before using it, please read the user manual and then please use it properly in accordance with the description.
- To avoid an occurrence of malfunction or an electric shock by leakage, please ensure ground connection and use it in specified power source.

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